We Claim:

1. An arrangement comprising:

a channel code encoder responsive to an applied input signal,

a space-time encoder responsive to output signal of said channel code encoder; and

a modulator responsive to said space time-encoder.

2. The arrangement of claim **1** further comprising pulse shaping circuitry and at least two antennas for transmitting a space-time coded signal created by said space-time encoder and modulated by said modulator.

3. A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing a plurality of at least two signal streams, and

a like plurality of channel coding/space-time coding transmitters, each responsive to a different signal stream of said plurality of signal streams.

4. The transmitter of claim **3** where each of said channel coding/space-time coding transmitters comprises:

a channel coder of rate R_i,

a space-time encoder responsive to output signal of said channel code encoder,

a modulator responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, modulated by said modulator, and conditioned by said pulse shaping circuitry.

5. The transmitter of claim **4** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i i=1,2,...,L, that are not identical to each other.

6. The transmitter of claim **4** where said demultiplexer develops an L plurality of

signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i i=1,2,...,L, that are such that $R_1 > R_2 > \cdots > R_L$.

7. The transmitter of claim **1** where said channel code encoder performs trellis encoding.

8. The transmitter of claim **1** where said channel code encoder performs convolutional encoding.

9. A receiver comprising:

a detector of space-time coded signal; and

a decoder for decoding a channel code encoded signal that is embedded in output signals of said detector.

10. The receiver of claim **9** where said detector employs a MMSE IC decoder.

11. The receiver of claim **9** where said detector employs a two step algorithm to develop a weights vector for canceling interfering signals from terminals other than a given terminal whose signal is being detected.

12. The receiver of claim **11** where said two step algorithm is:

$$(\hat{\mathbf{c}},\hat{\mathbf{s}}) = \text{II.DECODE}(\mathbf{r}_1,\mathbf{r}_2,\mathbf{H}_1,\mathbf{H}_2,\mathbf{G}_1,\mathbf{G}_2,\Gamma)$$

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$$(\hat{\mathbf{c}}_0,\Delta_{c,o}) = \text{MMSE.DECODE}(\mathbf{r}_1,\mathbf{r}_2,\mathbf{H}_1,\mathbf{H}_2,\mathbf{G}_1,\mathbf{G}_2,\Gamma)$$

$$\mathbf{x}_1 = \mathbf{r}_1 - \mathbf{H}_1 \cdot \hat{\mathbf{c}}_o \quad , \quad \mathbf{x}_2 = \mathbf{r}_2 - \mathbf{H}_2 \cdot \hat{\mathbf{c}}_o$$

$$f(\mathbf{s}) = \|\mathbf{x}_1 - \mathbf{G}_1 \cdot \mathbf{s}\|^2 + \|\mathbf{x}_2 - \mathbf{G}_2 \cdot \mathbf{s}\|^2$$

$$\hat{\mathbf{s}}_o = \arg\min_{s \in \mathbf{S}} \left(f(\mathbf{s})\right) \quad , \quad \Delta_{s,o} = f(\mathbf{s})$$

$$(\hat{\mathbf{s}}_1,\Delta_{s,1}) = \text{MMSE.DECODE}(\mathbf{r}_1,\mathbf{r}_2,\mathbf{G}_1,\mathbf{G}_2,\mathbf{H}_1,\mathbf{H}_2,\Gamma)$$

$$\mathbf{y}_1 = \mathbf{r}_1 - \mathbf{G}_1 \cdot \hat{\mathbf{s}}_1 \quad , \quad \mathbf{y}_2 = \mathbf{r}_2 - \mathbf{G}_2 \cdot \hat{\mathbf{s}}_1$$

$$f(\mathbf{c}) = \|\mathbf{y}_1 - \mathbf{H}_1 \cdot \mathbf{c}\|^2 + \|\mathbf{y}_2 - \mathbf{H}_2 \cdot \mathbf{c}\|^2$$

$$\hat{\mathbf{c}}_1 = \arg\min_{c \in \mathbf{C}} \left(f(\mathbf{c})\right) \quad , \quad \Delta_{c,1} = f(\mathbf{c})$$

If $(\Delta_{c,o} + \Delta_{s,o}) < (\Delta_{c,1} + \Delta_{s,1})$

$$(\hat{\mathbf{c}},\hat{\mathbf{s}}) = (\hat{\mathbf{c}}_o,\hat{\mathbf{s}}_o)$$

Else

$$(\hat{\mathbf{c}},\hat{\mathbf{s}}) = (\hat{\mathbf{c}}_1,\hat{\mathbf{s}}_1)$$

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13. The receiver of claim **9** where said decoder for decoding a channel code is a trellis decoder.

14. The receiver of claim **9** where said decoder for decoding a channel code is a convolutional decoder.

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